

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Improvements in or relating to Retractable Desk Extensions and the Like

We, WILKES BERGER ENGINEERING COMPANY LIMITED, a British Company, of 143-9, Curtain Road, London, E.C.2. (Communication from ANTON SCHNEIDER, a German citizen, of Eisenwarenfabrik, Kenzingen, Baden, Germany) do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to retractable desk extensions and the like.

It is an object of the invention to provide an improved construction of bracket device which enables the extension carried thereby to be operated conveniently, the improved bracket device being reliable and being capable of supporting a relatively heavy weight, such as a typewriter or other heavy machine.

It is a further object of the invention to provide a bracket device for use in connection with what is herein termed a "typewriter lift," this comprising a platform or desk extension upon which the typewriter or equivalent is mounted, said platform or equivalent together with its load being movable from a lowered retracted position to a raised or extended position ready for use.

According to the invention there is provided a bracket device for a retractable extension comprising an anchorage plate to be secured to a desk or equivalent, an extension support plate for attachment to the extension and a pair of front and rear links connecting spaced points on the anchorage plate with corresponding points on the extension support plate to give parallel motion to the extension support plate as it is moved from a lowered retracted position beneath the desk top to a raised position in which it projects beyond the desk top to form an extension

thereof, a catch device being provided to retain the bracket in its raised position, said catch device being operative between one of the links and the extension support plate and influenced by a gravity arm capable of being changed from one operative position to another automatically upon movement of the extension support plate. The catch device may comprise a pivoted catch member connected to the gravity arm through lost motion means. A dead-centre spring may be provided to urge the extension support plate towards its fully retracted position and/or to apply a lifting force to the extension support plate when it is in its raised position. When normally installed, two such bracket devices are mounted side by side so as to carry the desk extension or equivalent between the two extension support plates.

According to another aspect of the invention a desk or other article of furniture is provided having a retractable extension mounted by means of a pair of the improved bracket devices.

The invention is illustrated by way of example in the accompanying drawings in which:

Figure 1 is a perspective view of a retractable desk lift in accordance with the invention, in the lowered position.

Figure 2 is a similar view showing the device in the raised, i.e., operative, position.

Figure 3 is a side elevation of a bracket device according to the invention in the lowered position.

Figure 4 is a side elevation showing the device in the operative position.

Referring to the drawings, the bracket device is principally composed of four rigid elongated members which are pivoted together at their extremities to form an articulated parallelogram; the upper of these members constitutes an anchorage plate 1 which

is fixed to the inside wall of the desk 2 so as to extend horizontally just below the top thereof and to its end parts a front link 3 and a rear link 4 are pivoted by means of pivots 3a and 4a, the links 3 and 4 having their free ends pivoted through the medium of pivots 4b and 4c to the terminal parts of an extension support plate 5 which is thus constrained by the links to remain parallel with the anchorage plate 1 as it moves upwards and forwards to its extended position and *vice versa*. The extension support plate 5 is conveniently provided with angle brackets 6 whereby it is adapted to be attached to the extension 7 or equivalent platform member. In the operative or raised position of the bracket device, the extension support plate 5 is disposed almost on a level with the anchorage plate 1 (Figure 2) and it is held in this position by a catch device having the following construction.

Approximately midway of its length the front link 3 is staggered or offset and at this point the catch member 8 is loosely pivoted thereto by a pivot 8a. The catch member 8 is conveniently made of sheet metal and has at its rear a hook recess 9 adapted to engage with a catch stud 10 which projects outwardly from the extension support plate 5; the angular movement of the catch member 8 is limited to a few degrees by means of a pair of stop projections (not shown) engageable with the front link 3. Mounted upon the pivot 8a of the catch member 8 is a gravity arm 13 having a weight 14 at its extremity, the arm 13 being free to move relative to the catch member 8 through an angle of approximately 100° at either end of which it engages a corresponding stop so that the weight of the gravity arm 13 resiliently urges the catch member 8 in the corresponding direction. When the bracket device is moved towards its fully-lowered position, the gravity arm 13 falls forwards to a position in which it urges the catch member 8 rearwards and upwards, so that the next time that the extension support plate 5 is moved upwards to its extended position the catch member 8 automatically engages the catch stud 10 and holds the platform 7 firm. To release the platform or extension 7 in readiness for lowering it, the gravity arm 13 of each bracket device is thrown over rearwards so as to act resiliently on the catch member 8 in the releasing direction, thus as the weight of the platform is taken off the catch member 8 it automatically disengages and allows the platform or extension 7 with its load to be moved downwards and rearwards into the desk.

Each bracket device also includes a dead-centre spring arrangement which is adapted to facilitate movement of the platform 7 even when this is loaded, and to hold the platform in the inoperative position, which position

lies rather further inwards than the fully lowered position. For this purpose, the rear link 4 is Y-shaped, one limb being directed obliquely upwards and forwards and having its extremity pivoted to the anchorage plate 1. The upper extremity of the other limb of the rear link 4 is pivotally attached to a spring anchorage link 15 which is U-shaped to circumvent the pivot 4a of the rear link 4; the other limb of the spring anchorage link 14 is attached to a coiled tension spring 16 the forward end of which in turn is attached to the side of the desk by a spring anchorage bracket 17. Thus when the platform 7 is in its fully raised position the distance between the two upper extremities of the rear link 4 is disposed substantially at right angles to the axis of the spring 16 so that the latter exerts a substantial lifting force upon the platform 7 to absorb at least half of the weight thereof and its load. During lowering of the platform 7 the spring 16 passes a dead centre position and beyond this point it acts upon the rear link 4 to press the lower end thereof rearwards. Conveniently the spring anchorage bracket 17 has its lower part directed obliquely rearwards so as to form a stop for the front link 3 when the bracket device is moved to its inoperative position.

In order to improve the rigidity of the platform 7 when the latter is in its raised or extended position, a pair of cam plates 19 are fastened to the two sides of the desk and have their inwardly-facing surfaces converging in the upward direction. The cam plates 19 are positioned so as to be engaged by the respective rear link of the two bracket devices, the cam plates tending to force the rear link inwards and thus take up any play.

The improved bracket devices are particularly suitable for installing a "typewriter lift" within the pedestal of a desk the two anchorage plates 1, the anchorage brackets 17, and the cam plates 19 being fitted to the internal side walls of the pedestal. In its inoperative position the platform 7 with its typewriter or equivalent load is disposed inside the pedestal and is protected by closing the usual door or shutter. On the other hand when the door or shutter is opened the platform 7 can be swung upwards and forwards and locked in an operative position which is a few inches lower than the plane of the desk top. If desired the rigidity of the platform 7 may be improved by utilizing the open door of the pedestal to serve as a stiffening member, a suitable catch (not shown) being provided to fasten the door to the raised platform.

It will be understood that the above details are given by way of example only and that the construction of the improved bracket devices can be modified to suit requirements.

WHAT WE CLAIM IS:-

1. A bracket device for a retractable extension comprising an anchorage plate to be secured to a desk or equivalent, an extension support plate for attachment to the extension and a pair of front and rear links connecting spaced points on the anchorage plate with corresponding points on the extension support plate to give parallel motion to the extension support plate as it is moved from a lowered retracted position beneath the desk top to a raised position in which it projects beyond the desk top to form an extension thereof, a catch device being provided to retain the bracket in its raised position, said catch device being operative between one of the links and the extension support plate and influenced by a gravity arm capable of being changed from one operative position to another automatically upon movement of the extension support plate.
2. A bracket device as claimed in claim 1 wherein the catch device comprises a pivoted catch member connected to the gravity arm by lost motion means.
3. A bracket device as claimed in claim 1 wherein a dead centre spring is provided to urge the extension support plate towards its fully retracted position and/or to apply a lifting force to said support plate member when it is in its raised position.
4. A desk or other article of furniture having a retractable extension mounted by means of a pair of bracket devices constructed according to any of the preceding claims.
5. A bracket device for a retractable extension substantially as hereinbefore described with reference to the accompanying drawings.

for the Applicants:

F. J. CLEVELAND & COMPANY.

Chartered Patent Agents.

29, Southampton Buildings.

Chancery Lane.

London, W.C.2.

#### PROVISIONAL SPECIFICATION

#### Improvements in or relating to Retractable Desk Extensions and the Like

- 40 We, WILKES BERGLER ENGINEERING COMPANY LIMITED, a British Company, of 143-9, Curtain Road, London, E.C.2. (Communication from ANTON SCHNEIDER, a German citizen, of Eisenwarenfabrik, Kenzingen/Baden, Germany) do hereby declare this invention to be described in the following statement:—
- This invention relates to retractable desk extensions and the like.
- 50 It is an object of the invention to provide an improved construction of bracket device which enables the extension carried thereby to be operated conveniently, the improved bracket device being reliable and being capable of supporting a relatively heavy weight, such as a typewriter or other heavy machine.
- It is a further object of the invention to provide a bracket device for use in connection with what is herein termed a "typewriter lift," this comprising a platform or desk extension upon which the typewriter or equivalent is mounted, said platform or equivalent together with its load being movable from a lower retracted position to a raised or extended position ready for use.
- According to the invention a bracket device for a retractable extension comprises an anchorage plate to be secured to the desk or equivalent, an extension support plate for attachment to the extension, and a pair of front and rear links connecting spaced points on the anchorage plate with corresponding points on the extension support plate to give parallel motion to the extension support plate as it is moved from a lowered retracted position beneath the desk top to a raised position in which it projects beyond the desk top to form an extension thereof. Conveniently the bracket device is retained in its raised position by a catch device which is operative between one of the links and the extension support member. The catch device may be influenced by a gravity arm which may be arranged to change from one operative position to another automatically by the action of moving the extension support plate. Thus the catch device may comprise a pivoted catch member connected to the gravity arm through lost motion means. A dead-centre spring may be provided to urge the extension support member towards its fully retracted position and/or to apply lifting force to the extension support member when it is in its raised position. When normally installed, two such bracket devices are mounted side by side so as to carry the desk extension or equivalent between the two extension support members.
- According to another aspect of the invention a desk or other article of furniture is provided having a retractable extension mounted by means of a pair of the improved bracket devices.
- The preferred construction of bracket device will now be described as an example of the invention. It comprises principally four rigid elongated members which are pivoted together at their extremities to form an articulated parallelogram; the upper of these members constitutes an anchorage plate which is fixed to the inside wall of the desk so as to extend horizontally just below the top thereof, and to its end parts front and rear links are pivoted, these having their free ends pivoted to the terminal parts of an extension support plate which is thus constrained to

the links to remain parallel with the anchorage plate as it is moved upwards and forwards to its extended position and vice versa. The extension support plate is conveniently provided with one or more angle brackets by which it is adapted to be attached to the extension or equivalent platform member.

In the operative or raised position of the bracket device, the extension support plate is disposed almost on a level with the anchorage plate and it is held in this position by a catch device having the following construction, about half way along its length the front link is staggered or off-set and at this point a catch member is loosely pivoted to it. This catch member is conveniently made of sheet metal and has at its rear a hook recess adapted to engage with a catch stud projecting outwards from the extension support plate; the angular movement of the catch member is limited to a few degrees by means of a pair of stop projections engagable with the front link. Mounted upon the same pivot as the catch member is a gravity arm having a weight at its extremity, said arm being free to move relative to the catch member through an angle of about 180°, at either end of which it engages a corresponding stop so that the weight of the gravity arm resiliently urges the catch member in the corresponding direction. When the bracket device is moved towards its fully-lowered position the gravity arm falls forwards to a position in which it urges the catch member rearwards and upwards, so that the next time that the extension support plate is moved upwards to its extended position the catch member automatically engages the catch stud and holds the platform firm. To release the platform in readiness for lowering it, the gravity arm of each bracket device is thrown over rearwards so as to act resiliently on the catch member in the releasing direction; thus as the weight of the platform is taken off the catch member it automatically disengages and allows the platform with its load to be moved downwards and rearwards into the desk.

Each bracket device also includes a dead-centre spring arrangement which is adapted to facilitate movement of the platform, even when this is loaded, and to hold the platform in its inoperative position (which lies rather further rearwards than the fully lowered position) for this purpose the rear link is Y-shaped, the shorter limb being directed obliquely upwards and forwards and having its extremity pivoted to the anchorage plate. The upper extremity of the longer limb is pivotally attached to a spring anchorage link which is U-shaped so as to circumvent the

pivot of said rear link; the other limb of the spring anchorage link is attached to a coiled tension spring, the forward end of which latter is in turn attached to the anchorage plate, say by a spring anchorage bracket. Thus when the platform is in its fully raised position the distance between the two upper extremities of the rear link is disposed substantially at right angles to the axis of the spring so that the latter exerts a substantial lifting force upon the platform to absorb at least half of the weight thereof and its load. During lowering of the platform the spring passes a dead-centre position and beyond this point it acts upon the rear link to press the lower end thereof rearwards. Conveniently the spring anchorage bracket has its lower part directed obliquely rearwards so as to form a stop for the front link when the bracket device is moved to its inoperative position.

In order to improve the rigidity of the platform, when the latter is in its raised or extended position, a pair of cam plates are fastened to the two sides of the desk and have their inwardly-facing surfaces converging in the upward direction. They are positioned so as to be engaged by the respective rear link of the two bracket devices, said cam plates tending to force the rear link inwards and thus take up any play.

The improved bracket devices are particularly suitable for installing a "typewriter lift" within the pedestal of a desk, the two anchorage plates and the cam plates being fitted to the internal side walls of the pedestal. In its inoperative position the platform with its typewriter or equivalent load is disposed inside the pedestal and is protected by closing the usual door or shutter. On the other hand when the door or shutter is opened the platform can be swung upwards and rearwards and locked in an operative position which is a few inches lower than the general plane of the desk top. If desired the rigidity of the platform can be improved by using the open door of the pedestal as a stiffening member, a convenient catch being provided to fasten the door to the raised platform.

It will be understood that the above details are given by way of example only and that the construction of the improved bracket devices can be modified to suit requirements.

for the Applicants:

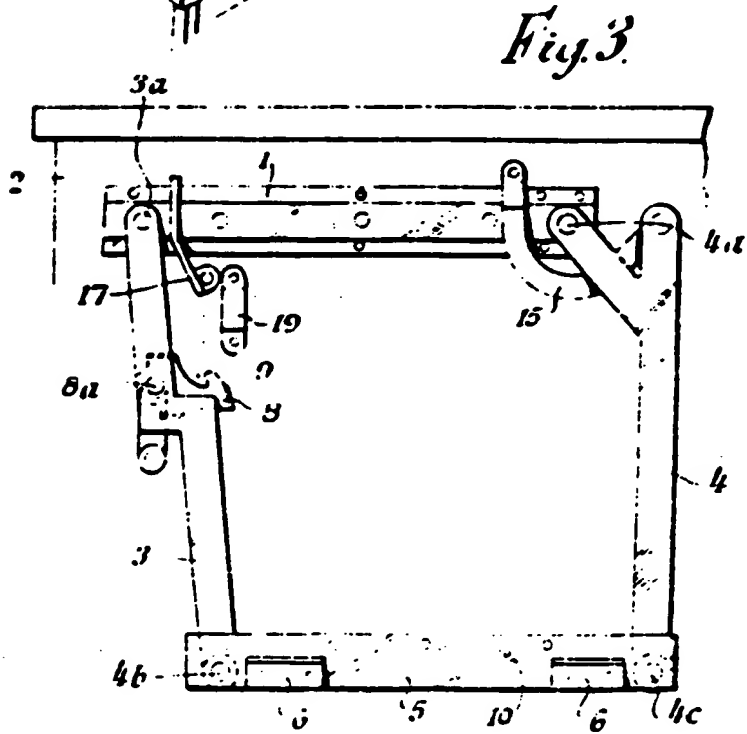
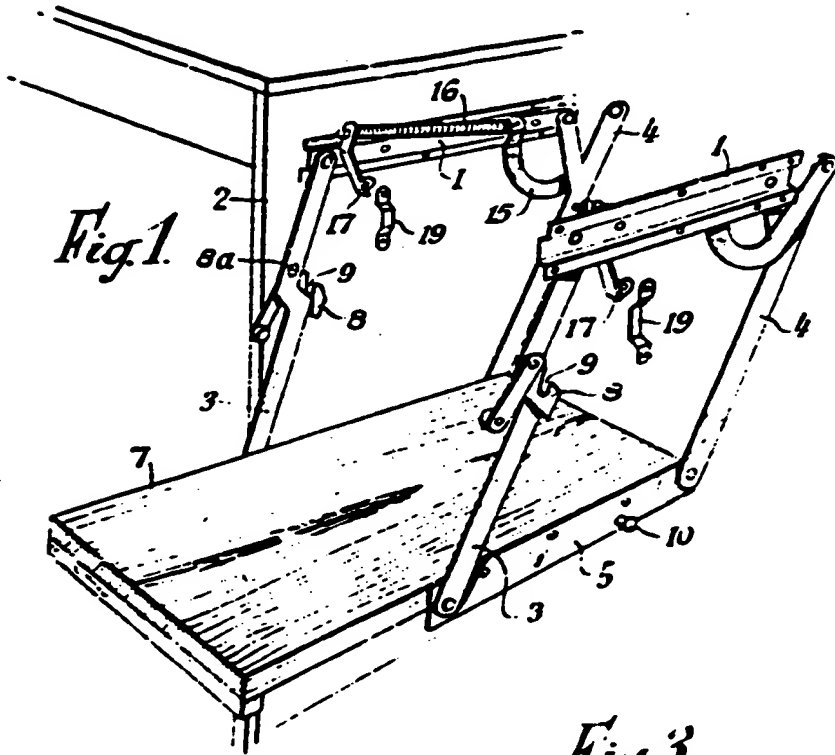
F. J. CLEVELAND & COMPANY.

Chartered Patent Agents.

29, Southampton Buildings,

Chancery Lane,

London, W.C.2.



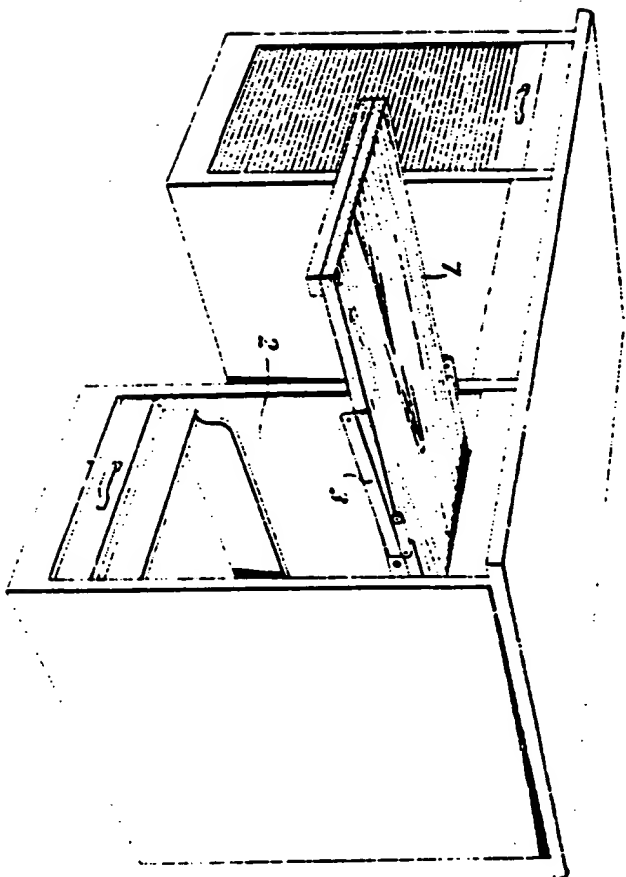


Fig. 2.

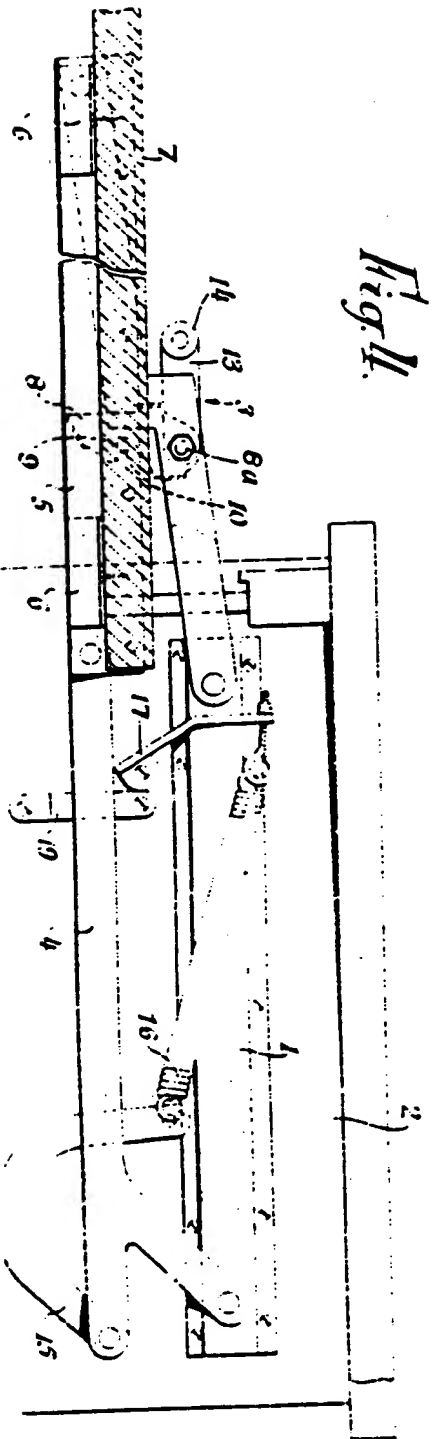


Fig. 4.